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ON
OPHTHALMIA NEONATORUM.

[PAPER READ BEFORE THE MANCHESTER MEDICAL SOCIETY.]

BY

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P R E F A C E .

THE following paper was read before the Medical Society, in this city, and it has been printed at the request of the members then present; and I hope that by calling attention to the subject it may be of some service to my professional brethren.

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OPHTHALMIA NEONATORUM.

THE prevalence of Ophthalmia Neonatorum in general practice is so great that the immense importance of its early and accurate diagnosis and treatment can scarcely be exaggerated. There are many diseases of the eye, from their rarity, or from the special knowledge and constant practice required for their detection, which the practitioner can scarcely be expected to be conversant with; but this does not apply to that form of purulent conjunctivitis which I intend to discuss very briefly to-night. I propose to give you the result of some investigation as to the condition of cases presented for treatment at the Royal Eye Hospital, which will, I believe, justify me in calling your especial attention to the subject.

Out of 420 consecutive cases a large proportion had been under previous treatment.

In 72, or nearly 18 per cent, the cornea was affected.

In 38, *both* corneæ were affected.

In 34, *one* cornea was affected.

In 16, *both eyes* were hopelessly *lost*.

In 21, *one* eye was hopelessly *lost*, making a total of 53 eyes lost, or nearly $6\frac{1}{4}$ per cent.

The eyes lost were either—

(a) In a state of complete necrosis of the cornea, or

(b) Advanced staphyloma of the cornea.

In 26 cases there were ulcers of the cornea.

In 14 cases there was perforation of the cornea, with prolapse of iris.

In 16 cases there were large opacities.

In 5 cases there were large ulcers, with lead deposits.

In 4 cases there were large ulcers, with nitrate of silver deposits.

After observation of many thousands of cases, brought early into the Hospital, before the cornea was affected, I unhesitatingly say that the conditions above described ought not to exist. I do not remember a single case of uncomplicated ophthalmia neonatorum lost, where proper treatment was adopted at an early stage.

Another fact that ought to impress upon us the importance of the subject is this, that after inquiry into the cause of blindness in 72 cases examined for admission to Henshaw's Blind Asylum, 54 of them were found to be distinctly traceable to purulent ophthalmia in infancy, and that therefore 75 per cent or three-quarters of all the blindness among the inmates of one of the largest blind asylums are due to preventible causes.

SYMPTOMS.

In this affection the symptoms vary according to the severity of the disease. In some of the milder cases they resemble those of catarrhal conjunctivitis—the lids are very slightly swollen, the mucous membrane is injected, and there is a quantity of muco-purulent discharge; but in the typical cases they are well pronounced—the lids are greatly swollen, œdematous, and puffy from the serous infiltration into their loose texture. The upper lid is so swollen that it often overlaps the lower; the edges of the lids are so matted together by the dried discharge that it is often difficult to open them, which must be done *with the greatest care*, in order to ascertain the condition of the cornea. The surgeon, “sitting on a chair of moderate height, lays a towel over his knees, on which to receive the head of the child,” which the nurse or attendant, standing in front of him, holds *in situ*. He is then in a position to make a careful examination. The scabs and discharge should be well washed previously; he then proceeds to separate the lids, and *the one thing to be kept in mind is not to lay any pressure on the eyeball*, for fear of corneal breaches and consequent perforation and escape of the lens. This pressure is best avoided by using a pair of Desmarres' lid retractors. One should be gently insinuated under the upper and the other under the lower lid, and in the process of separation the force should be directed outwards *from the eye*. Where the retractors are not procurable, “very efficient

substitutes may be made from a good-sized hair pin, bent at the top, or from bits of wire." When the lids are well retracted, the nurse should carefully wipe off all the discharge, which will be found in abundance, and for this purpose it is advisable not to use sponges, as they are apt to become loaded with putrid matter, and are consequently often media of infection. It is far better to use pieces of muslin, fine linen, or calico, which can be destroyed after they have been used. Now, a clear view of the cornea may be obtained. The ocular conjunctiva is often vascular and swollen from the serous exudation into the sub-conjunctival areolar tissue. It often prolapses or bags out between the edges of the lids. The palpebral conjunctiva must be next examined, after carefully everting the lids, and this is a little proceeding which requires some practice to do it neatly and well. In most of the books it is recommended to use a probe, or pencil "laid horizontally on the lid, and then pulling the lid by the lashes over the barrier so as to evert it." A much better way is the following:—Taking advantage of the laxity of the skin over the palpebral cartilage, the forefinger should be placed lightly on the skin close to the ciliary margin and drawn gently backwards, laying the pressure on the supra-orbital ridge and carefully avoiding any pressure on the eyeball; this shortening of the skin naturally turns the cartilage on edge, and the lid is everted.

The lining membrane of the lids will be found vascular and swollen, and, in neglected cases, the papillæ are so prominent that the surface is one mass of granulations secreting a degenerated pus.

While the eyelids are retracted the condition of the cornea must be carefully examined, and it may present varying conditions, from slight haziness to ulceration, perforation, prolapse of the iris, with or without escape of the lens, or sloughing of the whole cornea, or its complete bulging or staphyloma.

ETIOLOGY.

In the large majority, if not in all the cases, the cause is infection from the vaginal discharges during parturition, which are generally leucorrhœal, but occasionally gonorrhœal in their nature. It is sometimes caused by washing the child's

eyes with infected sponges, or by the infectious matter prevalent in the poisonous atmosphere of the crowded houses of the poor. It has been urged by some that sudden exposure of the child's eyes to the light, the heat of the fire, or a cold draught of air may cause it, but this is highly improbable. That more infants are not infected, considering the prevalence of vaginal discharges, can be easily explained, as Dr. De Wecker has pointed out, by the fact that the infant instinctively curls its eyelids inwards. It may be desirable to discuss the cause of one of the most frequent and also the most dangerous complications of this disease, viz., the affection of the cornea. There are various opinions; some believe that the nutrition of the cornea (which is a non-vascular structure) is interfered with by the pressure of the exudation, chemosis, and weight of the lids. Others, however, deny this, and maintain that the cause is the injurious effect of the pent-up pus, which absorbs the superficial epithelial coat, or renders it soft and easily denuded. Once this is removed, it is easily understood how the pus-corporuscles migrate through the corneal tissue and give rise to the various conditions. We certainly often meet with ulcers of the cornea in cases where the ocular conjunctiva retains its normal white glistening appearance. I consider, therefore, that the latter explanation is the most satisfactory, but it is highly probable that the exudation of the mucous membrane and palpebral swelling are frequently factors.

PROGNOSIS.

The prognosis of a simple uncomplicated case is most satisfactory. Where the cornea *is not* implicated, *every* case *ought* to do well. Where the cornea *is* affected, the prognosis will depend on the extent. Where there is only a superficial turbidity shown by a general haze over the cornea, and if the conjunctivitis is controllable, it generally clears up perfectly. Where interstitial changes have occurred, some permanent opacity must be expected. Superficial ulcers also leave more or less permanent opacities, according to their depth and extent. Deep ulcers always leave dense leucomata, and are liable during the progress of the disease to lead to perforation of the cornea and escape of the aqueous humour. If the perforating wound is small, the iris may bulge forward and

become protruded through the opening, and, in favourable cases, become united to its edges, forming synechia anterior, with an opacity of the cornea.

If the wound is large, the iris and surrounding cornea are apt to give way and bulge, forming staphyloma; or the lens may escape through the perforation, and the globe may shrink in consequence. When the perforation is central, the lens may come in contact with the bottom of the wound, and a permanent white dot may be formed on its anterior capsule.

DIAGNOSIS.

The diagnosis is generally very easy. In the earlier stages it may be mistaken for simple catarrhal conjunctivitis, or *vice versa*. When the discharge is pronounced, this doubt is solved. It is very difficult in some cases to determine whether the contagion is leucorrhœal or gonorrhœal, but, as far as treatment is concerned, this is of no importance. On account of the close relationship between purulent and diphtheritic conjunctivitis, it is necessary to bear the latter in mind, and to be able to diagnose it, as the one form sometimes passes into the other. It is seldom we find *true* diphtheritic conjunctivitis in this country, in which the eyelids become thickened, hard, and brawny, secreting on their ocular surface a fibrinous exudation, in fact a tough yellowish membrane which is inseparable from the lid. Many so-called diphtheritic cases are undoubtedly what some authors call membranous or croupal conjunctivitis, in which a distinct layer, often a complete cast of the lids, is formed, which, however, is not an infiltration, and is easily removed. De Wecker considers it analogous to tracheal croup, and says that the membranes in both closely resemble one another microscopically, and that buccal croup has been found co-existing with this form of conjunctivitis.

TREATMENT.

I have already mentioned preventive measures. It is desirable for the medical attendant to inquire, if possible, before accouchement, as to the presence of vaginal discharges, and to treat them, relying chiefly on constitutional treatment—tonics of various kinds. In all cases the greatest care should be taken to prevent infection *during* parturition; the towels,

napkins, hands of everyone concerned should be scrupulously clean before touching the child's eyes, and there should be no excitable rush on the part of friends to see their colour, &c. The eyelids should be thoroughly cleansed with a little Condyl's fluid, a two per cent solution of carbolic acid, or simple lukewarm water, and dried thoroughly before any attempt is made to open the eyes. *Greater attention to this simple precaution would prevent a large number of purulent cases.* But, suppose one or both eyes are affected. As soon as this is detected energetic treatment should be adopted. The first thing to do is to ascertain the condition of the cornea, and for this I have already suggested a few simple instructions. If the cornea is intact, the next point to consider is how most effectually to check the discharge.

Dr. De Wecker, in his book, *Therapeutique Oculaire*, speaks highly of the effect of brushing the eyelids with a two per cent solution of carbolic acid, or a weak solution of liquor plumbi, and of the after use of an astringent lotion of the sulphates of zinc and alum. My personal experience of the effects of dilute solutions of carbolic acid is not extensive, I will therefore confine myself to the treatment adopted at the Royal Eye Hospital, and, if not possessing the claim of newness, certainly possesses the greater advantage of being highly efficacious.

Theoretically, however, weak solutions of carbolic, salicylic, or boracic acids ought to give good results, and are undoubtedly worthy of trial. There is one thing I cannot too strongly call your attention to, and that is, that whatever applications are used *should be applied by the surgeon himself.* The practice that is far too prevalent of ordering an astringent lotion, or nitrate of silver drops, to be used by the attendant, must be condemned, as these remedies—though probably excellent powers for good, if they found their way into direct contact with the secreting membrane—generally, however, are applied *outside* the lids, and are allowed to irrigate thoroughly the cheeks and face, which will thus tend more towards the destruction of the cornea, by neglect, than to the arrest of the discharge.

You should have everything you require ready for use before commencing the examination, viz., a pair of eyelid retractors, a towel, some pieces of linen, two little glasses, one containing a solution of nitrate of silver, 10, 15, or 20 grains

to the ounce of water, according to the severity of the disease, and the other containing a solution of salt and water, or water alone. Into each of these solutions place an ordinary camel's hair pencil of moderate size. Having placed yourself and the child's head, and everted the lids as recommended, brush the palpebral conjunctiva over with the nitrate of silver solution, especially the oculo-palpebral conjunctiva, which is the principal secreting fold. Do this until the characteristic bluish-white effect of the nitrate is visible, and then wash off the superabundant nitrate with plenty of water, or salt and water. This should be done regularly once a day, and in bad cases twice a day, until all the discharge has ceased, and some astringent lotion should then be ordered to be used to the eyes; sulphate of alum, sulphate of zinc, two or three grains to the ounce of water, will do very well. A little ung. rubrum should be used to the margins of the lids at bed time to prevent their adhering together. Plain and simple instructions should be given to the person in charge how to proceed, to keep the eyes constantly clean from the discharge by separating the eyelids and allowing it to escape from the corners and crevices; first using a little water, and afterwards the astringent lotion, which should be allowed to come in contact with the diseased conjunctiva each time. This cleaning and application of the lotion cannot be done too often. If these instructions are faithfully carried out, cases of ophthalmia neonatorum are easily and satisfactorily cured in two or three weeks, and where the greatest cleanliness is observed, much quicker. Syringes I would condemn, as they are liable to do harm and are not nearly so efficacious, and, besides, some of the contagious matter may easily be squirted back into the surgeon's eye; in fact, I have a medical friend under treatment just now for granular conjunctivitis contracted in this way.

The person in charge of the child should be told how contagious the matter is, and to avoid using towels, &c., for anyone else in the house. If only one eye is attacked, the greatest care should be taken to prevent the other becoming affected. I have always found attention to instructions sufficient to secure this, and it is scarcely necessary to cover the unaffected eye over with a watch glass or any complicated apparatus. The cases will not go wrong if the surgeon keeps a

constant watch over them, and enforces strict attention on the part of the nurse. Where the cornea is ulcerated greater care must be taken not to press on the eyeball, and after applying the nitrate of silver solution a drop of sulphate of atropia, four grains to the ounce of water, should be instilled into the eye. When perforation occurs the same treatment must be adopted, and the patient must be seen more frequently. De Wecker praises a one per cent solution of sulphate of eserine in supuration of the cornea, but it has not proved successful in the few cases in which I have tried it. It is not within the province of this paper to enter into the after-treatment of corneal complications; but with patience, even in apparently hopeless cases, one is able, by an iridectomy later on, to restore useful vision.

Let me just remind you of the necessity of avoiding lead lotions where there are ulcers of the cornea, as they often form a large crust over the ulcerated surface by deposition, and greatly interfere with vision. You will also see by referring to the tabulated list that nitrate of silver is liable to deposit on ulcerated spots, unless it is well washed, after use, with a solution of salt and water. We now seldom see the characteristic greenish effect produced in the conjunctiva, by the abuse of caustic, which used to be so prevalent when the solid nitrate was resorted to on all occasions, and for almost all eye affections. I ought to add that gentle scarification will do good where the lids are in a granular condition, and the cautious use of the mitigated caustic where the discharge is intractable. As to internal treatment, very little is required. It is advisable to give small doses of hydrarg *c* cretæ in cases where syphilis is suspected. Tonics should be given to weakly children, and plenty of fresh air should be insisted on. I must thank you, Mr. President and gentlemen, for the attentive way in which you have listened to my paper, which, however simple it may be, I hope will assist in the prevention of the serious results of ophthalmia neonatorum now too often observed.